GINEERING ROOM

ELECTRICITY on the FARM

The National Magazine of Rural Electrification

FEBRUARY

General Purpose Three-Quarter Horsepower Elevator for Baled Hay, Ear Corn and Grain

Summary of Engineers' Findings on Mow Curing of Loose, Chopped and Baled Hay

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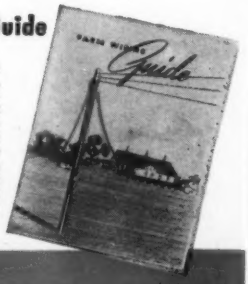

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Section CDW-257-61,
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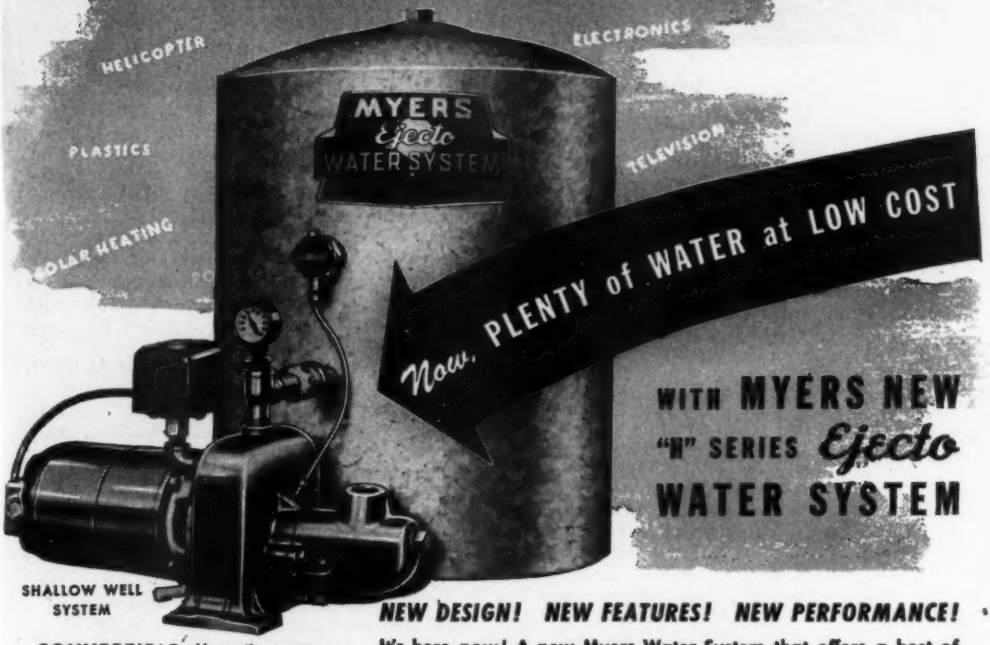
GENERAL ELECTRIC

AMAZING is the word for this new water system, too



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It's here now! A new Myers Water System that offers a host of unusual features for greater efficiency, economy and reliability.

Quietly, smoothly this new Myers "H" Series *Ejecto* pumps extraordinary quantities of water in all horsepower ranges — gives you abundant capacity at low cost — provides unusual advantages in installation, operation and servicing. It's an outstanding new water system — a quality water system — designed to meet economically the stepped-up water requirements of modern farming and modern living.

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Although production of the new "H" Series *Ejecto* is being increased, you may not be able to obtain one immediately due to the overwhelming demand. Go to your Myers dealer, however — see why this new "H" Series *Ejecto* is well worth waiting for and also learn about the complete Myers line. Mail the coupon for free literature.

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LESS SERVICING. New Type pump has only one moving part. No gears to wear. No stuffing box to leak or repack.

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Editor's Chat

WHY WE FIGHT

During football season I came through the outskirts of Philadelphia on a train. On vacant lots within a few blocks I saw seven "kid" football games in progress. They ranged from a school play-lot game with some twenty youngsters to a little triangular plot some forty feet on a side with a two-boy team. Those two kids had no football, but they were healthy boys and had time to play. The "center" passed a stick to the "fullback," then suddenly became the opposing team and tackled the "fullback" as he ran. It was two-man football, kid style, and they were having a whale of a time.

Travellers returning from Nazi ridden Europe tell us the back street kids of Europe are not the healthy, playful youngsters we have in America. They are hungry, malnourished, impaired in mind and body. Much of the food was shipped to Germany. These handicapped boys are the ones who will have to face the Germans in the next twenty-five years. It is one way of creating a Nazi superior race. It may be the first step toward winning the next war.

If we are a little confused about the Four Freedoms and our fighting and spending goals, we at least know we'd scrap to enable our youngsters to grow up with healthy minds and bodies and to play football.

HOMEMADE EQUIPMENT

Our pages frequently contain plans and descriptions of electrically operated equipment to be made at home. We have definite notions about such equipment.

In general we recommend manufactured equipment over homemade. It is only reasonable that factory engineers and shop workers, trained for their jobs, can do better in designing and building than an untrained worker without special tools and equipment. Take milk coolers or farm freezers. You may use the same materials as the factory, but if the insulating material is not properly moisture and vapor sealed, it will gradually lose its effectiveness or if moisture gets into your refrigerant coils, you may gradually destroy your machine by corrosion. Again, if there is the slightest leakage of current into the water from a poultry water warmer, hens will not drink. It is often the case, also, that an untrained worker will eventually spend more on a makeshift piece of equipment than on a good factory job.

Then why do we print plans? There are many reasons. Often those plans are the first step in arousing one's interest in better equipment. Some few farmers do an excellent job of making equipment in spare hours and save some money doing it. Many pieces of equipment are built by FFA boys as shop projects. These pieces of equipment become community demonstrations of better farming methods with electricity. Once the economy and other advantages of electric equipment are demonstrated, the user of the homemade device and his neighbors are ready to buy better factory built units.

Our plans also start things. For instance, the little quarter-horsepower canvas belt grain elevator of our January 1942 issue has blossomed through several steps into the three-quarter horsepower hay, earcorn and grain elevator of this issue. That development took place in farm shops. Manufacturers are not yet building these small electric powered elevators. They will eventually. Some one had to promote the idea. We did.

(And this hint to manufacturers: It is time you are waking up to the fact that there is a market for equipment especially designed for electric operation—lighter weight, semi-automatic, labor-saving equipment. And you need to get it out where farmers can see and know what you have to offer.)

For satisfactory service we advise buying good equipment from a dealer you trust and who will be on hand when you need service or parts. Get equipment made by a manufacturer in whom you have confidence.

If you do build equipment for yourself, be sure you understand how: then take time to do it right.

VALUABLE HOURS

Two months from now we will be well into the spring work. Right now there is a little slack. These hours can be the most valuable of the year. Use them to plan the year's work, to figure how to eliminate waste effort, to clean, oil and repair motors, brooders, pumps, farm machinery. These head and hand-work hours can save a lot of hard labor and costly delays during the busy season.

George Kable

ELECTRICITY ON THE FARM
The National Magazine of Rural Electrification

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BEN WILLIAMS finds a "Better Method" for WATERING COWS

Still watering the cows the HARD WAY-eh Ben?
Well, SOMEBODY'S got to PUMP the WATER
Nobody PUMPS WATER on OUR FARM. Come on over and I'll show you...
We water our cows ELECTRICALLY. They give MORE MILK because they drink MORE WATER!!
This ELECTRIC WATER SYSTEM saves me about 15 HOURS of HARD WORK a month. It's part of our BETTER METHODS program
Here's a book that tells all about BETTER METHODS!
Say, this book is SUPER! Wonder if I can apply BETTER METHODS to my farm work?
Sure you CAN! Let's figure it out the way the GUIDE BOOK says...

WATERING COWS the "HARD WAY"

Gallons of water pumped each month — 6,000

Number of strokes of pump handle — 36,000

Hours required for pumping water each month — 15

Labor cost at 25¢ an hour — $3.75

WATERING COWS the "BETTER METHODS" WAY

Gallons of water pumped each month — 9000

Cost of electricity — $.45

Savings in labor cost ($3.75-$.45) — $3.30

Estimated increase in monthly milk check — $16.50

Total monthly profit from "Better Methods" — $19.80

P.S. Ben entered the "BETTER METHODS" CONTEST and soon learned that a PUMP-JACK would do the HARD WORK watering HIS cows!

4-H'ERS... "Better farm-and-home Methods Electric Contest" STARTS NOW!

New "Better Methods" Contest is a logical expansion of the familiar Rural Electrification Contest. It teaches boys and girls how to *save time, labor, steps, and money* ... on the farm and in the home. *Mail coupon for complete information, today!*

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Please send complete information about "Better Methods" Contest and reserve my copy of *free* Guide Book.

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TIME is MONEY on the FARM

Lugging water on the farm takes a big slice out of your working day—and a big piece of profit, too.

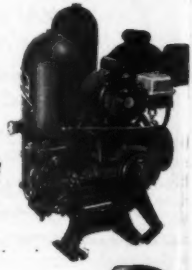
Those hours that you spend lugging buckets might much more profitably be spent doing many things that require your skill and knowledge as a farmer, and not just the drudgery of a common laborer.

When you entrust this back-breaking but mighty important work to a dependable Goulds, the job is done better, quicker, easier, and much more economically.

There is a long-life, trouble-free Goulds Water System that will solve your problem of farm water service, and free you completely from this most tiring and time-consuming chore.

Write for the name of your nearest Goulds dealer.

Goulds famous Jet-O-Matic Domestic Water System . . . one unit for shallow or deep well operation.



Goulds "Cid" Shallow Well Pumping Unit.

Goulds "Cid" Deep Well Pumping Unit.

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SENECA FALLS, NEW YORK

Goulds builds ONLY Pumps . . . only DEPENDABLE Pumps

ELECTRICITY on the FARM

ELECTRICITY: ***Versatile Energy for Many Farm Uses***

Power—Light—Heat—Electronics. Easily adapted, started, controlled: automatic. Labor doer and saver, money maker, and product improver and increaser. Used intelligently, it changes the whole aspect of farm life and production.

FEBRUARY, 1945

Something New in Stock Water Warmers

WHERE one is dependent on wind for pumping water, it is a common custom to have a large water tank, 10 or 12 feet across, in which to store a supply of water. In the winter time these tanks delight in freezing over. That means stock without water, chopping ice several times a day, or stoking a fuel-fired tank heater. Some attempts have been made to heat these tanks electrically, but it is a wasteful and costly practice.

If Tank Is Large

What can be done is to isolate a small quantity of water in the large tank by standing a headless barrel, box or tub in the tank so water can flow into the barrel from below and that small quantity kept from freezing with an electric heater inside the barrel. The top of the barrel must extend above the surface of the water in the tank. The large tank then serves as a reservoir, so long as it does not freeze solid, and the barrel provides an unfrozen area from which the stock can drink.

A still better way, where running water or an electric water system is available, is to use a small tank in a protected place and holding only 10 to 20 gallons maintained at constant level by a float valve. The water in this small tank can be easily kept from freezing with an electric heating element, and at small cost.

Howard Smith of the Trumbull Electric Mfg. Co. has been experimenting with a heating element for a small tank of this type. He has sent us some preliminary information which we are pleased to pass along.

By placing a wooden float board on the surface of a tank, much of the heat loss from the water to the air is stopped. Animals would probably learn to push down on the board when they want to drink. By combining a small heating element with the float board in the small tank, there is a possibility of having a very inexpensive and economical winter water tank.

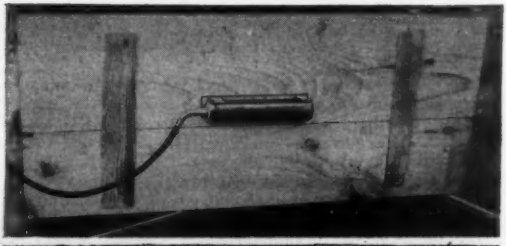
To try this out, a Trumbull poultry water warmer equipped with a 250 watt heating element in place of the regular 155 watt element, was attached to the bottom of a float board. This float heater was placed in a tank containing 25 gallons of water placed out of doors in December weather. The lowest temperature at the time the observations were made was 14°. Under these conditions and with an 8½" fall of snow, the heater with its thermostat set at 50° maintained a surface water temperature of 48°. Only a few of these experimental 250 watt heaters are available this winer, but further studies are being made of using them singly or in groups under a float board in different size tanks. Since the heaters are thermostatically controlled, the current is turned off whenever the surface water reaches 50°.

Prior to the war, tank heaters of several types were available. One was made of soil heating cable attached to the under side of a float board and thermally controlled. Another was a thermostatically controlled immersion heater in a cast iron housing to be placed in the tank of water. The secret of using any of these types economically is to confine them to as small a volume of water as possible and in a protected place.

Baby Crop

Between 1930 and 1940 the rural-farm population of the five Appalachian states, excluding Georgia, contributed 780,000 persons to other states through migration. At the same time enough babies were born to give the area 273,000 more population than were lost by migration. USDA.

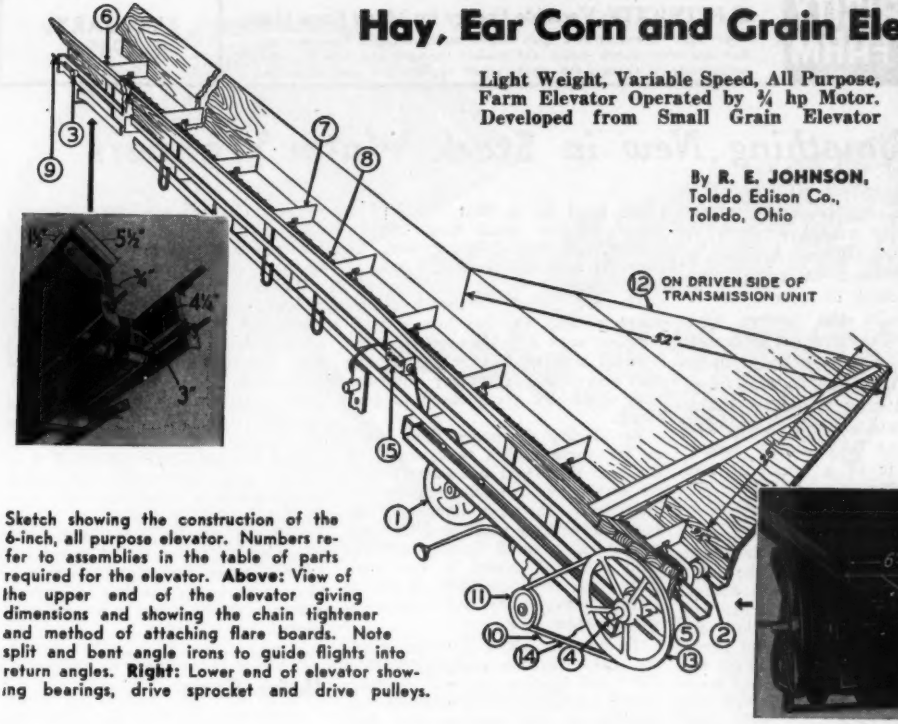
Upper Right: The 250 w heater held in place on the bottom of the float board by a large fuse clip. **Lower Right:** Twenty-five-gallon metal tank with experimental float board and 250 w heater. Surface water was kept at 48° with the thermostatically controlled heater in December weather. **Below:** A wooden watering trough showing a close fitting removable wooden partition which extends to within 2 in. of the bottom of the tank. It divides the tank so part of it can be heated. Float board with heater attached in right end of tank.



Hay, Ear Corn and Grain Elevator

Light Weight, Variable Speed, All Purpose, Farm Elevator Operated by ¾ hp Motor. Developed from Small Grain Elevator

By **R. E. JOHNSON,**
Toledo Edison Co.,
Toledo, Ohio



Sketch showing the construction of the 6-inch, all purpose elevator. Numbers refer to assemblies in the table of parts required for the elevator. Above: View of the upper end of the elevator giving dimensions and showing the chain tightener and method of attaching flare boards. Note split and bent angle irons to guide flights into return angles. Right: Lower end of elevator showing bearings, drive sprocket and drive pulleys.

RAPID progress has been made in the development of an all-purpose farm elevator designed to be powered by a fractional horsepower motor.

The first report from Ohio on this subject was made in an article for this magazine published in January 1943, followed by a second article on a revised model published in September of the same year.

At that time attention was given only to handling grains and ear-corn. A bale elevator is normally wide and heavy. Could the narrower, lighter and easier-to-manouver, grain elevator be adopted to handle bales? It has been.

In one successful design the sides of the chute were hinged. They were used straight up for small grains, at a 45 degree angle for ear-corn, and horizontally for bales. Although simple enough in principle, it is not necessary to have this alterable construction as it has been found that bales can be elevated just as successfully by placing them on one edge between flare boards permanently set at 45 degrees. Moreover greater strength can be built into the elevator with no additional materials when this rigid construction is employed.

The principal changes from the earlier published designs include the addition of flare boards and an arrangement for slowing the conveyor

PARTS REQUIRED FOR THE ELEVATOR

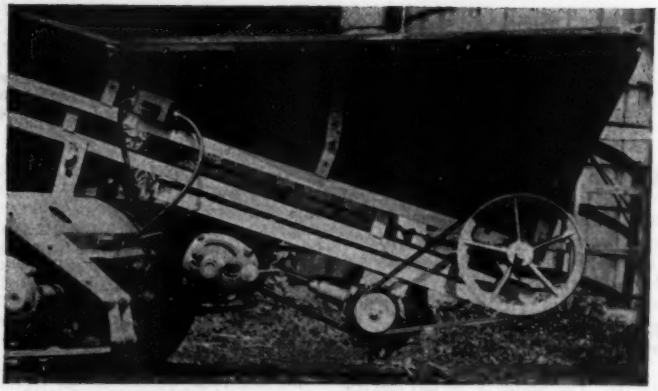
Assembly Number	Description	Quantity	I.H.C. Part No.
1.	Repulsion-induction or capacitor 230 volt, 60 cycle, single phase, 1725 rpm motor—¾ hp..	1	
2.	Bearing box ⅞"—To be mounted by welding to frame angle. Roller bearing ⅞".....	2 2	B 2458 C 701
3.	Shaft, cold rolled steel ⅞" x 10" for upper sprocket. Drill for cotter keys.....	1	
4.	Shaft, cold rolled steel ⅞" x 14" for lower sprocket. Drill for cotter keys and pins....	1	
5.	Drive sprocket—6 tooth, ⅞" hub. Pin to lower shaft	1	1380 K
6.	Idler sprocket—6 tooth, ⅞" hub. Contains roller bearing insert. Key in position.....	1	UA1142
7.	Flight 3 x 5½" complete with attachment link for No. 55 chain.....	60	MA93579
8.	Conveyor Chain—No. 55.....	52 ft.	55
9.	Chain adjustment—Galv. machine bolt ½" x 8" with D loop welded to head for ⅞" shaft....	2	
10.	Model A Ford transmission.....	1	
11.	4" V pulley for B section belt.....	2	
12.	10" V pulley for B section belt.....	1	
13.	12" V pulley for B section belt.....	1	
14.	58" V-belt B section.....	2	
15.	Thermal overload switch.....	1	
Misc. Items	Zerk grease fitting.....	3	14186D
	⅞" Flat washer for bearing cover.....	4	Q 3478
	Cotter keys	6	
	Pins for attaching lower sprocket to shaft..	2	
	Small section of 2 ply fabric belting to close opening for flights at the lower end of hopper — 6" x 8".....	1	
	Sheet metal shield at lower end of chute to prevent leakage of small grains.....	1	
	Carriage bolts — ⅜" x 1½".....	154	

speed to approximately 90 ft. per minute. Step pulleys afford one means of achieving the different speeds, but the use of an automobile transmission has been found very desirable for this purpose. It enables the operator to instantly select the most advantageous speed for the task at hand.

While the ear corn elevator with flare boards and operated at slower speed makes a satisfactory elevator for bales, for those who want the greatest possible utility and convenience an elevator like that built by John Strayer and his son Vernon is recommended.

In 1944 the Strayers used this elevator to load or put in storage:

5000 bales of hay and straw
150 tons of ear corn
2200 bushels of oats
400 bushels of wheat
500 bushels of soy beans.

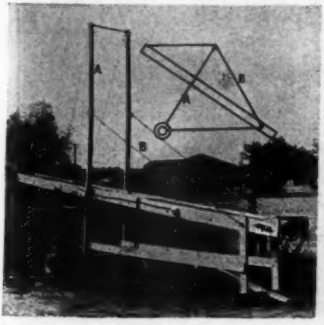


Lower end of elevator showing ¾ hp motor, V belt drive and Ford Model A transmission for different speeds. Motor control is in a handy spot under the hopper. Note the heavy rubber insulated super service cord to supply the electricity.

Above: Two wheel mounting for elevator on Clark Biddle farm. Easy to transport and not too difficult to raise.

Below: A Michigan elevator on a wide two-wheel truck. Mr. Amundson, Agricultural Engineer, Michigan State College, advises making members A and B of the same length and material, as shown in the insert sketch, to provide stiffness and avoid side strain on the members. Note that the motor drive is at the upper end of the elevator.

Mr. Strayer shifting gears to "low" for bales. They travel 90 ft per minute. Elevator will handle two small bales at a time. Note the crank operated hoist for raising the elevator. Bales go up without difficulty in the narrow chute.



These two men are pleased with the elevator which is built for trouble-free service.

The business part of the elevator is mounted on a four-wheel trailer equipped with a crank operated hoist. It is therefore not only easily transported but is also a one-man tool. When grains are being placed in bins or cribs one man can move the unit as required or raise or lower the upper end of the chute as the bin fills.

Construction details are shown in the photographs and accompanying drawing. The Strayer elevator is 30 ft. long and the chute is 8 inches wide. A width of six inches inside measurement as described in September, 1943, is adequate for most farm needs. Six inch elevators have ample capacity and have been tested on other farms. Their performance with bales is equally satisfactory. This recommendation is made because 3" x 5½" flights are commercially available as repair parts for corn picker elevators whereas 3" x 7½" flights for an 8" elevator must be made to order and are not readily procurable.

. . . . . (More on page 23)

Soil Heated and Sterilized Electrically*

G. Thorndike Trull, Massachusetts' Largest Market Gardener, Uses a 160 Sash Electric Hotbed and Sterilizes His Hotbed Soil with a Portable Electric Sterilizer. Some Hints for Spring.

SOME people still think of electrically heated hotbeds and electrically sterilized soil as an expensive hobby. Not so with G. Thorndike Trull, Massachusetts' largest market gardener. He operates his 110 acres of truck gardens to make money; and he uses electric heat to help him.

Mr. Trull grows all of his own plants. For doing it, he has electric soil heating cable installed under 160 of the 360 sash in his hotbeds. The electric beds are operated in units of 24 sash on one thermostat. Current is supplied at 230 volts in order to keep down the size of wires and cost of the installation. Heating cable is used in 120 foot lengths, one length being enough for four sash.

Plant growing is not a warm weather operation in Massachusetts. During the period from March 1 through the middle of May, when the beds are in operation, the temperature sometimes gets down below zero. Tight board windbreaks are used to protect the beds, and straw mats are used to cover them on cold nights. Temperatures are held at 70° for celery, tomatoes and peppers and at 55° for lettuce and cabbage.

The power consumption for the season, including sterilization, averages 76.7 kw-hrs per sash. Mr. Trull thinks it is a good investment.

Heating the soil for plant growth is only one use that is being made of electricity by Mr. Trull. A still more extensive use is the sterilization of the soil in the plant beds. He used to be troubled by weed seeds blowing into the beds each fall and by damping off of celery plants and other seedlings in the spring. After experimenting with chemicals he has finally settled on the use of a 27 cu ft portable electric soil sterilizer to control both the weeds and damping-off organisms. The sterilizer has been in use for three years.

Construction of Sterilization Unit

The sterilizing unit is unique. It is made up of two General Electric half-cubic yard sterilizers mounted end to end on two 4" x 6" timbers which span the hotbed frames. These timbers extend out beyond the frames to form handles for moving the unit. It is moved by two men. The sterilizing boxes are made of double pine planking with a hinged lid for filling and a strongly hinged dump bottom for emptying. Each half-yard box contains a 3 kw, 230 v. heating element. The two heaters are controlled by a single thermostat. Current is supplied through a portable 3-conductor service entrance cable.

The operation of the sterilizer is very simple. It is set up across the hotbed about 12 feet from one end with the lids and dump bottoms opening toward the end. The bottom is closed and the top four inches of soil from the end section of the bed shovelled into the boxes. The lids are then closed and the sterilizer wrapped in blankets to save heat. The current is turned on automatically by a time switch during the night when there is little demand for current on the line. A special rate of 1½c per kw-hr is charged for this "off-peak" current. When the soil is sufficiently heated, the sterilizer thermostat cuts off the current. The next day this pasteurized soil is dumped and spread back in the bed, the sterilizer moved ahead 12 feet and refilled.

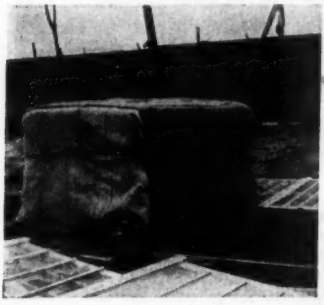
It takes about five hours of heating to sterilize one batch from a 4½ sash bed. The power consumed is approximately one kw-hr per cubic foot of soil or 6 kw-hr per sash, which at Mr. Trull's rate is about 9¢ per sash. Several weeks before the soil is to be sterilized, the sash are put on the beds and the sun thaws out the ground. The sterilizing is done through the months of February, March and April, with a short rest period before planting, which leaves the soil in fine condition.

Check Equipment Now!

It will soon be time to start hotbeds again. You may not have 160 sash, but your one or two sash bed may be quite important to you.

. . . . . (More on page 21)

*Photographs and information furnished by F. H. Peckham, Farm Specialist, Lowell (Mass.) Electric Light Corporation.



Above: The 27 cu. ft., 6 kw sterilizer loaded and blanketed ready for off-peak night operation. Trap doors on bottom dump the sterilized soil back into the bed. Sterilization kills weed seeds and disease spores.

Right: Two electric hotbeds, each 72 sash long. Lead covered soil heating cable is used for heating. Temperature is automatically controlled by thermostats, one for each six sash. Note the wind-break fences and the straw mats used for covering the beds.

Barn Hay Curing "Goes to Town"

Over 200 Attend ASAE Conference. Latest Methods of Curing Loose, Chopped and Baled Hay Discussed. Great Future in Improving Hay by Simple Barn Curing Methods

A FEW weeks ago more than 200 keenly interested persons from 38 states and three foreign countries gathered in Knoxville, Tennessee, to exchange experiences on mow hay curing. The conference was sponsored by the Southeast Section and the National Hay Harvesting and Storage Committee of the American Society of Agricultural Engineers. Those attending were mostly engineers, college and government research men, representatives of manufacturers of farm machinery, electrical equipment and blowers, rural service men from utility companies, and a sprinkling of dairy, agronomy and nutrition specialists, farmers and equipment dealers. They were the men who have worked with this new process of hay making all over the United States or who were expecting to continue research work or build equipment to further the process.

The subjects discussed were largely technical. They included the layout of air distribution systems, the air pressure needed in different duct systems, desirable air velocities, blower design, permissible depths of hay, rate of moisture removal, periodic vs. continuous blowing, desirability of artificial heat, hay quality and feeding results. A technical report of the conference will be printed in *Agricultural Engineering*, official publication of the Am. Soc. of Ag. Eng. (St. Joseph, Mich.). The following brief account of some of the discussions should be of general interest.

The Curing Process

The process of barn hay curing was developed by agricultural engineers with the TVA in cooperation with the University of Tennessee. (See articles in ELECTRICITY ON THE FARM, Apr. 1940, p. 11; June 1940, p. 27; June 1941, p. 6; Apr. 1943, pp. 4, 6. 7; July 1943, p. 27; Sept. 1943, p. 22; Mar. 1944, pp. 4, 10, 11; June 1944, p. 10; Aug. 1944, p. 4). The system consists of a main duct built on the hay mow floor and from which laterals extend out on one side or both sides. Air under pressure is blown through this duct system and up through the loose hay which completely covers it. The air may be heated, but in most cases no heat is provided. The process consists in drying the hay as much as possible in the field in a few hours and then finishing the curing in the mow. There are now several hundreds of these mow curing or hay finishing systems in barns in all parts of the country.

Of first interest is the fact that there has never been a fire due to spontaneous combustion of hay in any barn where this curing system was installed, even though the hay was put in the mow immediately after cutting or when wet from rain. The fire hazard is apparently much less in mow curing than from putting field cured hay in the mow.

The consensus of the conference was that the mow curing system was entirely practical, safe and economically sound. When properly cured in the mow, hay grades higher, has a higher feeding value and sells for considerably more than field cured hay. This applies to all regions where hay is subject to high humidities, rain or dew damage in the field.

Variations in Design

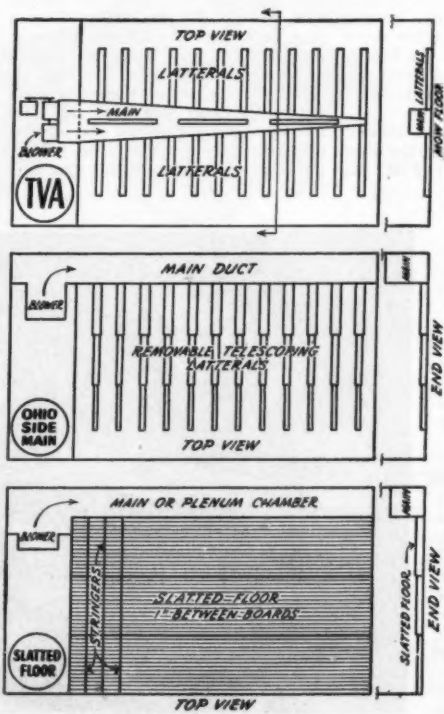
Several modifications of the TVA-UT system are now in use.

Prof. R. C. Miller of Ohio State University (Columbus, O.) places the main duct along one side of the barn, making it large enough for a man to walk through. The laterals extending out from this main telescope in sections and are removable when the barn is empty. The air velocity through the large main is relatively slow and the air pressure moderate.

Prof. R. W. Carpenter of the University of Maryland (College Park, Md.) has designed a duct system similar to the TVA-UT plan but with tapering laterals having holes in the sides instead of openings underneath for distributing the air through the hay. It calls for somewhat higher air pressures, and a higher priced, higher efficiency blower, but of smaller size. The duct system is well adapted to factory fabrication.

In Western Pennsylvania, slatted false floors have been used in place of lateral ducts. Some have been in use four years. Twenty-one of these driers were installed in 1944 under the supervision of J. B. Stere, Agricultural Engineer of the West Penn Power Co. (Pittsburgh, Pa.). These systems have a large duct or plenum chamber along one side or in the center of the mow floor. A supplemental step floor is then built over the mow floor, using 8" or 10" stringers at right angles to the main duct, and reducing to 4" or 6" stringers farthest from the duct. The supplemental floor boards over the stringers are placed ¾" or 1" apart. Air passes from the main duct, between the stringers and up between the boards of the supplemental floor through the hay. The air pressure needed depends on the depth of hay in the mow. Successive curings have been put in these mows to a

. . . (More on page 24)



Electrical Housekeeping

Edited by **GAIL MEREDITH**

Sit Down to Iron

IRONING machines are designed for folks who think it is easier to sit than to stand. Nobody has to tell you who do it that ironing with a hand iron puts a good deal of responsibility on your feet before the job is done.

With a machine you can select a comfortable chair and sit down to work. You can do your ironing pretty much where you please, just so the cord of the ironer will reach a convenience outlet. You can iron right in the living room near the radio if you like.

Press and Rotary Type Ironers

There were two types of ironers on the market when ironers were still being made. We confidently expect they will be back again when peace comes. The press type ironer has a rectangular padded ironing board and a metal shoe of the same size which you lower onto the board. A motor supplies the pressure to smooth out the wrinkles in the garment you are ironing.

On the rotary ironer the ironing board is a padded roll and the iron is a curved metal shoe that fits against the roll. The turning roll carries the material under the hot shoe.

The controls on a good ironer are easy to reach and to operate. A touch of your finger or knee, or toe on a button or lever will set it in operation. You run it fast or slow as you desire or the ironing demands, and you stop it on the instant at a touch.

Ironing becomes an executive job. The responsibility for heating the iron, moving it over the fabric, and putting on the pressure has been handed over to electricity. You plan how to send the material through the ironer to the best advantage, and see that it goes that way.

You can see for yourself that such an ironer would save you work.

But scientific folks are never satisfied to base their judgments on observation alone. They like to find out for sure. Some years ago there were some tests run to show exactly how much energy ironing with an ironer does save.

The tests were made with a rotary ironer and an electric hand iron. In the first test the user of the hand iron sat in a comfortable chair to do her ironing, just as the user of the ironer did. Even then ironing with the ironer took 17% less energy than using the hand iron. When the hand worker sat on a stool, the difference was 19%, and when she stood up to iron, it grew to 34%. Carrying the test still further, they ironed the same things with two flat irons heated on a stove. In this case the ironer took 56% less energy.

If you would like to build up a nice little set of statistics of your own, so you can study the saving an ironer might make for you, jot down the length of time you iron, weigh the iron you use, and, just for the fun of it, count the number of times you lift that iron in half an hour or a hour. When you multiply it out, the number of lifts an hour by the time you iron, and then by the weight of the iron, you will probably have a surprise for yourself and your family in the weight you lift doing an ironing.

Besides saving you work, the electric ironer saves you time. The amount will depend a good deal on you, on the skill you develop, and on the kind of things in your laundry basket. You will save a good deal of time on flat work, on play suits, or aprons, or simple straight dresses. You may save time on shirts, on trousers, or jackets. You probably wouldn't save any time at all on fussy blouses or on very fancy dresses for little girls.

There is another snag you may run into in this time saving. Many women start right out ironing dozens of things they never ironed before. That adds to their pride in their linen closets, but it doesn't shorten the ironing time. Not that it matters, of course.

In one test on an ordinary family ironing of 143 pieces, men's, women's, and children's clothing and ordinary household linen, the ironing was done with an electric hand iron in seven hours and six minutes. With the ironer, the same things were ironed in four hours and fourteen minutes. That is a saving of two hours and fifty-two minutes.

Easy to Learn

Everyone seems to be in agreement about the ease of learning to do the flat pieces in your basket. When it comes to learning to do a shirt and dresses, different people develop different degrees of skill just as they do when they iron with a hand iron, and their rate of progress will vary.

If you have any doubts about the kind of ironing that can be done with an electric ironer, make an appointment with a good demonstrator of electric ironers and watch her turn out an ironing,—smooth, crisp, and beautiful—some morning a few months after V-Day.

NUMBERED are the days of the mixing spoon. Long has it tried the farm wife's patience, the strength of her good right arm. That this venerable, hand-powered cup-on-a-stick has served mother—and grandmother—faithfully, no one can deny. But that it will be out of place in the farm-of-the-future that rural America sees for itself is also true.

For electricity, the tireless hired hand, has helped many a farm family through several years of superhuman production effort. Small wonder, then, that so many women of agriculture intend bringing electricity's convenience indoors—to the kitchen—with an electric food mixer that eases cooking chores.

But the mixer of their choice must do more than just speed the mixing, blending, and mashing of foods. It must be dependable, provide unfaltering service year after year. That is the Hamilton Beach Food Mixer's greatest asset. For although it saves many minutes through all the steps in meal preparation, the Hamilton Beach Food Mixer is best known, over fifteen years, for its quality.

That's something to count on in your plans for making your farm of the future a better place for you and your family to live and work.

You can depend, too, on the quality of a Hamilton Beach Vacuum Cleaner . . . the modern cleaner that takes much of the hard work out of housecleaning. You can rest assured that, year in and year out, your rugs, draperies, and upholstered furniture can be brightened in a jiffy and be kept refreshingly alive. Hamilton Beach Vacuum Cleaners and Food Mixers will be available just as soon as we finish our war job. We tell you about our appliances now so that you can include them in your farm-of-the-future plans. Hamilton Beach Company, Division of Scovill Manufacturing Co., Racine, Wis.

HAMILTON BEACH

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In the milkhouse equipped for profit

EMPIRE MILKING MACHINE

ESCO FARM FREEZER

The most essential item in the milk house, say lots of profit-minded dairymen, is an Esco Milk Cooler.

They've seen their Esco do a better, faster cooling job, lower the bacteria count, fatten the monthly milk check. Well, it *should!* For Esco not only designed the first milk cooler, but has pioneered every major improvement in it.

When faced with so important a purchase as a milk cooler, farm freezer, or milking machine—remember the names "Esco" and "Empire." They mean leadership in helping make farm life easier and more profitable. *Esco Cabinet Co.—Empire Milking Machine Co., West Chester, Pa.*

ESCO EMPIRE

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Write us about a Dealership in your community

BUY MORE WAR BONDS

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All-Weather Brooder No. 10008 $37.95

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Insure for continued Health of stock in laying quarters by using Germicidal Light. Write for descriptive literature.

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ULTRAVIOLET GERMICIDAL LIGHT
Kills bacteria, checks the spread of disease. No. 10034. $16.75

SANITAIRE BROODERATOR
24-Hour Protection against air-borne infection. Includes Germicidal Light. No. 10016.. $29.50

A GENERAL ELECTRIC ORGANIZATION

Spring Sewing

Pattern 4692 . . . Princess cape and dainty frock with scalloped yoke. Sizes 2 to 10. Size 6 dress, 2 yds 35 inch fabric; cape, 1¼ yds 54 inch.

Pattern 4569 . . . A pinafore frock with shoulder ruffles and princess lines. Sizes 14 to 40, 32 to 42. Size 16, 3¼ yds. 35 inch fabric.

EACH PATTERN with a needlework pattern for personal or household decoration, TWENTY CENTS.

FIFTEEN CENTS more brings our new Spring Pattern Book of easy to sew styles. Free pattern printed right in book.

Send orders with coins enclosed to ELECTRICITY ON THE FARM, 196 Pattern Dept., 243 W. 17th Street, New York 11, N. Y. Allow plenty of time.

LIGHT to make farming more profitable

Greater safety at winter chores with G-E lamps to light the farm yard. Protection from prowlers, too. A big help, especially before sunup and after sun down.

Sturdier cows, healthier calves, when you have G-E sunlamps in the cowbarn, to provide the benefits of summer sunlight the year around.

More pigs for market with a brooder warmed by a G-E lamp. Can be thermostat controlled for constant temperature. Keeps baby pigs warm without danger of sow rolling on them; means fewer losses from cold, damp weather.

Faster, better repairs with G-E filament or fluorescent lamps in reflectors to light your workshop. They can help you *see* to do the job right, from winter reconditioning of equipment to emergency repairs.

. . . G-E lamps to fit every farm need

General Electric makes many different kinds of lamps that can help you increase farm profits . . . lamps for light to work by, for health-giving "sunlight", for germ-killing ultraviolet, for comforting heat and for many other uses. Find out how they can serve you. And when you need lamp bulbs, remember the constant aim of G-E lamp research is to make lamps . . .

Stay Brighter Longer

G-E MAZDA LAMPS

GENERAL ELECTRIC

Hear the G-E radio programs: "The G-E All-Girl Orchestra", Sunday 10 p. m. EWT, NBC; "The World Today" news, Monday through Friday 6:45 p. m. EWT, CBS; "The G-E Houseparty," Monday through Friday 4 p. m. EWT, CBS.

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You pay whenever your stock comes up to an empty trough. You lose in milk yield, for example. Horses can't be at their best when thirsty. Poultry, too, needs plenty of water for growth and egg production. There's an abundance of water in the well, but to get it out costs you time you often don't have, and pump-handle drudgery when there is so much else to be done.

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Water Systems Keep Troughs Full

A DURO Water System stops this loss. Merely a turn of the faucet fills troughs in a hurry, and provides water for poultry and garden. And added to this is the wonderful luxury and convenience of having at any moment a full flow of water for all household needs.

Let your DURO dealer show you how easily and quickly you may have these benefits. Or write us. You won't be obligated in any way by asking for complete details. We suggest you do this without delay.

THE DURO COMPANY
Dayton, Ohio

DURO

PUMPS AND WATER SYSTEMS

Good Griddle Cakes

Good pan cakes are easy to make. Starting with any standard recipe, sift the flour and baking powder, the salt and the sugar together. Then beat the eggs well. Beat them with a rotary beater or your electric mixer; don't just maddle up the yolk and the white with a fork. There's one school of griddle cakers that separates the eggs and adds the beaten whites last, after the melted fat, mixed with the milk and egg volks, has been stirred into the dry ingredients. They claim this gives a finer texture to the cake.

Minimize Beating

Take it easy with the beating for a light cake. Just mix the batter till the dry ingredients are moistened. Over mixing is responsible for some of the heavy cakes that give pancakes a bad name.

If you like your cakes thick, add a little more baking powder to the average recipe. Adding more flour will do it, too, but the resulting cake is not quite so tender.

For a thin brown beauty whose batter spreads out in little runnels that bake to a crisp lacy edge, use less flour and baking powder.

Then for the baking. No matter if you have always followed your grandmother's habit of keeping a pork rind handy to grease the griddle, you can bake yours on an ungreased iron or aluminum griddle if it is properly heated. Get the fat into the cakes instead of on the griddle. Use at least two tablespoons of shortening for each cup of milk in your recipe. Then the cakes won't stick.

The temperature of the griddle is all important. Heat it evenly on a large unit of your electric range. Begin with the switch turned to High. To make sure the iron has reached baking temperature, bake a little test cake or drop a few drops of water on it. If the cake browns nicely, or if the water dances over the surface, that's your go ahead signal. Pour the batter for your first cakes. But if that little cake browned too fast, or the water hissed into steam the minute it touched the metal, hold your hand; that griddle is too hot.

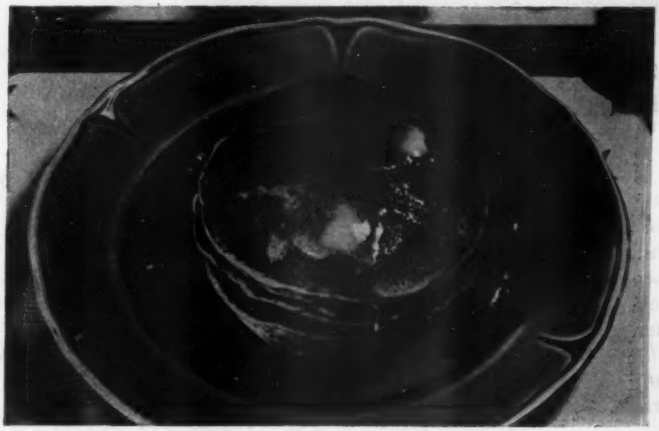
Cakes may stick to the iron if it is too hot or too cool.

Check Griddle Heat Carefully

When you are sure it is right, turn back the switch to lower the heat. You may use the Medium setting, or you may use Low on your range to keep the right baking temperature. Once you've found out which burner and which switch setting give you the right heat for the cakes your folks like, jot the record down on your recipe.

Just as soon as the batter hits the griddle, it starts to bubble and puff up. When the top is full of bubbles and a little dry, the cake is ready to turn. There's no harm in lifting the edge of that first cake cautiously and peering at the under side to make sure it's done.

If you have a broiler grid for your electric roaster, that is grand for griddle cakes. And if you have a sandwich grill tucked away on the top shelf of some storage closet,



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Yes, Mrs. Homemaker, you're in command of this operation and you'll want to make your job as easy and efficient as possible. Plan now, to acquire Universal appliances and housewares as fast as you can. Universal's reputation for quality is already famous — now, in addition you can look forward to new products, new features, new designs. You won't want to be without them a moment longer than necessary. To speed your enjoyment of Universal Better Living, check the items you want on the Shopping List on this page. *Clip it, keep it, and ask your Universal dealer to let you know when your chosen products become available.*

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Universal Electrical Appliances Distributed in Canada Exclusively by Northern Electric Company, Ltd.

Announcement

ON THE AVAILABILITY OF SHEEP SHEARING EQUIPMENT

Shearing equipment will be available earlier this year than in 1944. Please refer inquiries you receive for shearing equipment to your hardware or farm implement dealers.

EDUCATIONAL MATERIAL

Free educational material now available includes the Stewart Shearing Wall Chart, and Bulletin 23 on "Harvesting the Farm Flock Wool Crop." You may also secure from us, on a loan basis, the U. S. Office of Education Visual Aid Unit on "Sheep Shearing." This unit includes a 16mm. sound movie, a 35mm. slide film, and a printed teachers' manual. For complete information on Stewart Shearing Equipment for use in training programs, write for our catalog. Chicago Flexible Shaft Company, Dept. 30, 5600 Roosevelt Rd., Chicago 50, Illinois.

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THE BEST SHEARING MACHINES MADE

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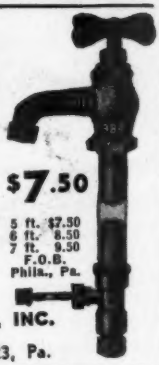
HANDY WATER FOR STOCK and FIRE PROTECTION

Galvanized iron top body and standpipe, brass lower body and working parts, lead waste included. Inlet connection for ¾" iron pipe, outlet for ¾" hose coupling. Order sizes to depth of frost—for 3-ft. burial, order 3 ft. size.



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If you have a water-hammer condition, install this eliminator before damage is done. Bottom tapped ½" iron pipe size for hot or cold water lines.

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THE I-X-L PUMP & MFG. CO., INC.
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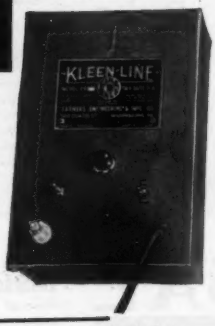
New! **ELECTRONIC** FENCE CONTROLLER
Kills Weeds

DEALER INQUIRIES INVITED



The KLEEN-LINE Controller is a close relation to some of today's modern fighting equipment. Two electrical impulses to the fence wire; one holds stock safely, the other kills all weeds touching the fence.

Proven by five years use on several thousand farms.

ALL MODELS FULLY WISCONSIN APPROVED.
WRITE FOR NEW BULLETIN

C. A. McDADE COMPANY
6526 HAMILTON AVENUE, PITTSBURGH 6, PA.

bring it to the table and bake the cakes right under the noses of your hungry family.

Pancakes are capable of endless variations. Once you've perfected your technique on plain pancakes, and have tried serving them rolled around hot little sausages, or spread with jelly and rolled tight, or sprinkled with powdered sugar and piled one on top of the other and cut in wedges like pie, when you have perfect pancakes everytime, I say, begin adding grated cheese, bits of crisp bacon, or minced left overs of fish or vegetables to the recipe. There is endless variety to be devised with a pancake as a base.

Keep your wits about you. Remember good intentions never baked a good griddle cake. Mix lightly. Be sure of the temperature of the griddle, turn the instant the cake is ready and bake to a golden brown. You have to hit the right moment for you can turn it only once. And don't give it a pat after you turn it either, not if you want a light puffy cake. Remember you don't have a second chance with a pancake.

A War Bond Resolution

Dear Sirs:

I spent this New Year's P. M. to good advantage. All I did was list our War Bonds and their maturity values and listed what each will buy, electrically, in ten years.

The first will get "my" pressure sauce-pan. Next, my electric roaster; then, a steam iron. (What a pleasant way to spend January 1st!) A bigger bond has been put aside for a freezer. Then I must still purchase a bond this month to cover the cost of an electric mixer.

Lately, I've accumulated a collection of booklets and clippings on good makes of the above articles. What good winter-evening reading they make! Then when I'm ready to buy post-war articles I'll know what to look for. If my refrigerator and washer need replacing then, my bonds will cover them also.

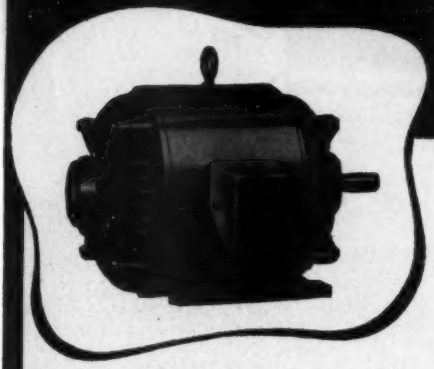
So my resolution for this war-year, is Bigger and More Bonds for me.

Sincerely,
MRS. B. KONNECK
Chatham, Illinois

Clean lamp bulbs, reflector bowls and shades will give 20 to 50 per cent more light.

"The food processing industry in the United States is 10% larger than the total railroad and steel industries combined."—*Clarence Birdseye.*

ONE MAN AND A CENTURY MOTOR
Can Often Do the Work of Two or More Men



CENTURY ELECTRIC CO.
1806 Pine Street St. Louis 3, Missouri

Offices and Stock Points in Principal Cities

Century C MOTORS

If you will take a pencil and paper and list all of the pumping, blower, baling, grinding, shelling, sorting, and other jobs that Century electric motors can help you do, you will undoubtedly be surprised.

Century Type RS Single Phase, Repulsion-Start Induction Brush-lifting motors are ideal for most farm applications because they have enough starting power to start the toughest loads, yet they use less starting current, and light flicker is reduced to a minimum. Many Century motor applications with automatic controls give day and night service.

Why not make your list now? Then, look into the possibility of using Century motor driven equipment to do the job. It will help you increase the nation's food production and pay you a handsome profit.

The Century line also includes Capacitor-start and 3-phase motors.

THE "*more abundant*" LIFE on the FARM

Victron

In post war, the magic that is electricity will enable more and more farm folk to keep their kitchens and bathrooms sweet and clean with Victron Ventilating Fans . . . to make ironing a delight with Victron Portable Ironers . . . and to provide a more healthful and productive atmosphere in dairy barns and poultry houses with powerful Victron Exhaust Fans. Your name on our list will bring you word when these and other items are ready. Write now.

6" to 22" Exhaust Fans... for Dairy Barn, Poultry House Ventilation

THE MARK OF QUALITY IN THINGS ELECTRICAL **VICTOR** *Electric Products, Inc.*
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Milk Nature's Way – with

RITE-WAY

MILKER

Duplicates the easy, natural action of the feeding calf — measured suction and swallowing — with gentle massage of udder and teats; inducing free letdown. The Rite-Way is as pleasing to the cow as Nature's way of milking.

Specially designed, tapered *Inflations* reproduce the massaging action of the calf, regulated by our balanced-stroke, springless Pulsator, which has only two moving parts.

Rite-Way Rotary Vacuum Pump has no equal for economy and efficiency.

Ask us for name of nearby dealer and write today for our dairy helps. FREE on request.

Get our prices on special pump exchange and Rubber Replacement parts for all standard-make mechanical milkers, Address

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SALES — SUPPLY BRANCHES:
EAST: Syracuse, N. Y., 248 W. Jefferson St.
WEST: Oakland, Cal., 4051 Telegraph Ave.
CANADA: Mutsy-Harris Co., Ltd., Toronto

Oink! Oink! Yipee!

YOU guessed it! It's hungry pigs in a window display. But there are lots of orphan pigs; and semi-orphans.

M. R. Norton, District Sales Supervisor of Wisconsin Power and Light Co., Fond du Lac, Wis., acquired these little Hampshires from a "mother who didn't love them." They had not nursed and Mr. Norton says it took considerable coaching before they got their pumps primed. He used regular baby bottles with nipples. It made a good display even if some farmers have been successful in teaching baby pigs to drink out of a trough.

The menu consisted of whole milk with one teaspoon of sugar per quart added at the recommendation of the University of Wisconsin and one drop of ferrous sulphate per quart at the suggestion of the county agent to prevent thumps.

But the main purpose of this story and of the display is a reminder that a simply made, lamp heated pig brooder will save young pigs of either the mothered or orphan variety. Mr. Norton says 250 watt lamps should be used in Wisconsin temperatures. The reflector may be cone shaped like this one, or a standard RLM reflector, or better still, use 250 watt, R40 reflector heat lamps which have the reflectors built in the glass. Local lamp dealers can get them for you.

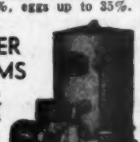
Farmers around Fond du Lac who have used electric pig brooders are enthusiastic about them.

HERE'S A MONEY-MAKER FOR FARMERS

You can have water where and when it's wanted with a BURKS Water System. This means you'll put meat on beef and hogs faster—increase milk up to 20%, eggs up to 35%.

BURKS WATER SYSTEMS

are famous for dependable service—longer life—and larger capacity. Only one moving part—self priming—easy to install. Both deep or shallow well systems. Write for catalog and prices now.



Super Turbine System

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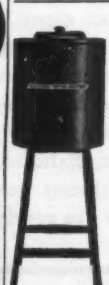

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WATER HEATER
FOR THE MILK HOUSE

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- EASY ACCESS FOR CLEANING.

*Also 18 Gallon size available

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THE SCHLUETER CO
JANESVILLE, WISCONSIN

1944 Index Ready

An index of all the articles in the 1944 issues of ELECTRICITY ON THE FARM has been printed and is available free to anyone requesting it. Just write to ELECTRICITY ON THE FARM, 24 W. 40th St., New York 18, N. Y. and ask for a copy of the 1944 Index. The index is especially desirable for reference if you keep your copies of the magazine.

Cover Photo

Pennsylvania teachers of vocational agriculture have been getting together in groups in high school shops to build small electric hay, grain and ear corn elevators under the direction of Prof. D. C. Sprague of the agricultural engineering department of Pennsylvania State College. Having actually built and operated one of these elevators with their own hands, the teachers go back to their schools and assist farm boys and farmers in building similar elevators for themselves. The picture was taken in the Quakertown high school farm shop. Those shown in the picture are: Prof. Sprague and Supervisors of Vocational Agriculture — Paul Umberger, Slatington; Ray Poorbaugh, Quakertown; Victor S. Ensminger, East Greenville, and Thomas Johnston, Buckingham. Photo by Samuel L. Horst, County Vocational Agriculture Advisor, Norristown, Pa.

Soil Sterilization

. . . . . (Here from page 10)

Check the thermostat to be sure it is in good working order. Clean the contacts and check the adjustment by putting the bulb in a pail of water with a good thermometer. Check the cable for cracks and short circuits. You must keep moisture out of the cable (ends or cracks in the lead sheath) to prevent current leakage. Have your beds tight so cold air cannot get into them. Windbreaks and cover blankets on cold nights help to hold temperatures and save current.

Hotbed cable can be obtained on priorities, but it takes some time unless your local dealer has it. If you cannot get heating cable, lamps strung over the top of the bed under the sash may be used as heaters. (See ELECTRICITY ON THE FARM, February 1944, p. 9.)

"Hay, the most important feed in the dairy ration, varies more in feeding value and in palatability than any other feed commonly used in dairy-cattle feeding."

—*Cornell University.*

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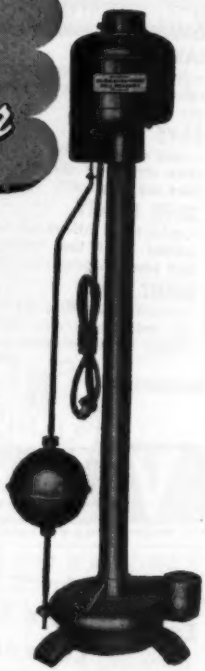
Keep Your Basement Dry with this Ready-to-Plug-In *Cellar Drainer*

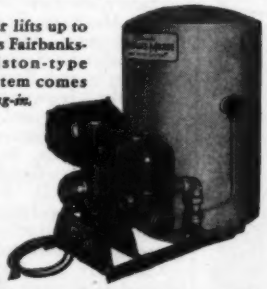


THIS fully automatic, electric, Fairbanks-Morse Cellar Drainer comes to you completely assembled, *ready-to-plug-in.* Precision-built of the finest materials available, it will give you the lastingly dependable service for which Fairbanks-Morse products are famous. Write for name of nearby dealer.

Unbiased Advice on WATER SYSTEMS

To give you maximum satisfaction at minimum cost, your automatic water system must be the *right* one for your individual need. Your Fairbanks-Morse dealer can give you *unbiased* advice, because Fairbanks-Morse makes *all* types and sizes. See him before you buy, or write to Fairbanks, Morse & Co., Fairbanks-Morse Building, Chicago 5, Illinois.

Popular for lifts up to 22 feet, this Fairbanks-Morse piston-type Water System comes *ready-to-plug-in.*



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Save Time, Money, and Fuel with This Fairbanks-Morse Magneto

Fairbanks-Morse Magnetos give old tractors new life and new fuel economy. There's a model to fit your tractor. See your Fairbanks-Morse Magneto Service Station.

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Water Systems · Sump Pumps · "Z" Engines · Light Plants
Windmills · Pump Jacks · Hammer Mills · Corn Shellers

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SAVE WORK
—just fill the hopper and snap the switch. It grinds automatically while you do other work.

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—grind for as little as one cent per 100 pounds! You'll have fresher, BETTER feed when you grind your OWN.

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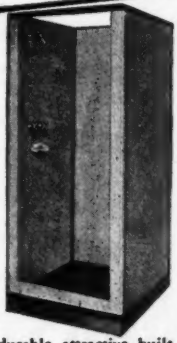

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Your plumber can install a BATHE-RITE SHOWER CABINET quickly, easily, at low cost, without extra wall or floor preparation — in any 3-ft. space. Strong, durable, attractive, built for long service. ADD THIS SHOWER NOW. See your plumber, or write direct giving his name.

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National 4-H Rural Electrification Winners

Lined up from right to left are Jesse Nemechek, community repair expert of Humboldt, Nebr., who found that "farms with electricity seemed to look much more prosperous than those without"; Raymond Schafer—"that Schafer boy who can patch up broken metal with an electric welder as good as new" from the Northern Pepsters 4-H Club of Red Lake Falls, Minn.; Rodney Hall of Parker, S. D., who rigged up an old junked wind generator rather than sit and wait for a power line; Harlan Dietzel of Bay Port, Mich., with an enviable record of electrical equipment made to help production on their 240 acre farm; Walter MacEvoy, Lockport, N. Y., the "electrical kid" of Niagara county who is virtually "wired for electricity"; and Frances McMillen, Enid, Oka., freshman at Oklahoma A & M college and "boss" of the electrical hired men on the 75 acre farm which she, her mother and sister operate. Greeting these 4-H champions is D. Edward Doane, chairman of the Doane Agricultural Service, Consultants for Westinghouse, which provided the awards.

These are the National Winners selected from more than 15,000 4-H Club members who entered the contests from all over the United States. The principal objectives of the contest were to maintain and use electrical equipment in the production of food and relief of labor shortage, and to acquire knowledge and skill in using electricity for better farming. Each of the six winners was given a $200 college scholarship and a free trip to the National 4-H Club Congress in Chicago, where they mingled with some 1,000 other top farm youths of the country. The contest is sponsored by the Westinghouse Company. It is under the direction of W. D. Hemker, manager of the Westinghouse Rural Electrification Department.

Other "top notchers" from their respective states, who received free trips to the 4-H Congress in Chicago included the following:

James E. Glasgow, Greenway, Ark.; Everett Anderson, Loveland, Colo.; Donald Francis Jacquier, Winsted, Conn.; William S. Pierson, Hackessin, Del.; Martha Speer, Menlo, Ga.; Roger Benton Humberger, Idaho Falls, Idaho; Glen Thomas, Dwight, Ill.; Jane Augustine, Indianapolis, Ind.; Boyd Chatterton, Onslow, Ia.; Betty Lou Kirk, Rayville, La.; Lawrence M. Potter, Sabattus, Me.; Herbert William Wessel, Jr., Laurel, Md.; John Francis Rockett, Jr., Arlington, Mass.; Trennon Jolly, Carthage, Miss.; S. D. Elliott, Modena, Mo.; Donaleen McRae, Forsyth, Mont.; Ygnacio Laca, Fallon, Nev.; Irving R. Roberts, Alton, N. H.; Lloyd L. Cockrell, Melrose, N. Mex.; Billy Breedlove, Nashville, N. C.; Lucille Miller, Davenport, N. D.; Bill Gavin, Portland, Ore.; Joseph Charles Ponte, Newport, R. I.; Loring Baker, Sumter, S. C.; Bruce Love, Greeneville, Tenn.; Royce Howard, Midland, Tex.; Calvin Funk, Richmond, Utah; Nan Johnson, Dolphin, Va.; William Edward Morgan, Shenandoah Jct., W. Va.; Wallace Kundert Feldt, Monticello, Wis.; Boll Boyd, Laramie, Wyo.

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The National Milker's rugged, simple construction guarantees fast, easy cleaning . . . long life. Amazingly simple to operate. A type for every need. Low priced.

3 Unit Track Model	$225.00
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Whether you milk 3 cows or 30, Nationals will save you time and money. Write today for free illustrated catalog.

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IRELAND Farm HOIST

Replaces tractor or team for unloading. Saves half your time. 2 H. P. motor or tractor pulley lifts up to ½ ton 40 feet per minute. Limited production—order now. See your DEALER or write for full information.

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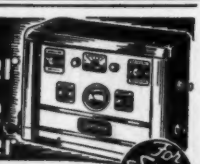

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Farm Elevator

. . . . . (Here from page 9)

The table on page 8 lists parts required for a 6" width elevator, plus angle iron for frame; strap iron braces, lumber, etc., described in this article. Assembly No. refers to numbers on the diagram. I.H.C. No. is International Harvester's catalog number of parts obtainable from that company. Other parts may be substituted where suitable.

Assembly Done in Shaffer Shop

The Strayers worked out the design for their elevator with Bruce Shaffer of Delta, Ohio. All welding and other assembly work was done in the Shaffer shop utilizing whatever parts and labor the Strayers could furnish. They had the four wheel trailer as well as some other material. The cash outlay was about $165 including ¾ H.P. motor and thermal protective device.

The frame work is welded, using ⅛" x 1½" x 1½" angle iron for the principal members, to which the lumber for the chute sides, bottom and flare boards is secured with carriage bolts. Each flare board is supported by 15 braces of ¼" x 1½" strap iron welded to the main frame.

An extra 8 ft. length of ⅛" x 2" x 2" angle iron was installed on each side to stiffen the center at the point where the hoist device supports the chute.

Angle irons are mounted —| |— to form a slot through which motor and transmission mounting bolts are inserted. These bolts when loosened provide a sliding adjustment for tightening the two V-Belts by moving transmission unit or motor forward or back as required.

All wooden members are of ¾" lumber with other essential dimensions shown in the illustrations.

The outside of the chute is painted as a protection from the weather. The inside was coated with hot linseed oil, because paint would have a tendency to rub off on the grain (particularly earcorn) as it passes up the chute.

All metal parts are painted with aluminum paint to prevent rusting as well as to improve the appearance of the elevator.

Flights on this elevator are spaced 13 inches apart.

Three Speed Conveyor Chain

Speed of the conveyor chain is approximately 90 ft. per minute in low and 180 ft. in high gear. With one man scooping, intermediate gear is used for elevating ear corn. High speed will keep two men busy.

Ball bearing motors are best, but if a sleeve bearing motor must be

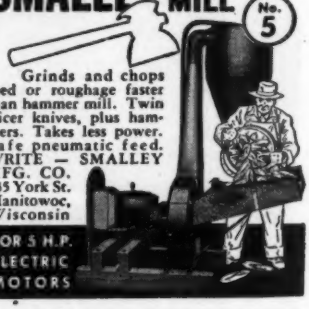
EVERY FARM SHOULD HAVE VOGEL FROST-PROOF HYDRANTS

Running water every day of the year. Nearly 100,000 in use.

See your nearest plumbing supply house or write us direct for complete information.

JOSEPH A. VOGEL COMPANY
Wilmington 99, Delaware

SMALLEY HATCHET MILL No. 5



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ELECTRICAL FARM EQUIPMENT
MANY PARTS for BROODERS, INCUBATORS, HOT BEDS, etc.

A TYPICAL ITEM: The efficient and automatic No. 4 brooder heater, costs only $5.80 delivered. Takes care of up to 150 chicks. Thousands in use.

ANOTHER LYON DEVELOPMENT: The PDQ Debeaker for beak cauterizing. Stops picking — reduces feed loss and nervousness — increases bird quality.

Send for catalog showing a variety of repair parts, heaters, thermostats, etc.

LYON RURAL ELECTRIC COMPANY
Dept. EF San Diego 12, California

used, reverse the end bells to keep the oil holes right side up, as the motor is mounted upside down.

EDITOR'S NOTE. Elevators of this same general type, namely 6 inches wide and 12 to 30 ft. long are being used for bales, earcorn and grain in Michigan, Pennsylvania and other states. Most of the designs are entirely of wood—wood chutes, wood housing, wood bearings—and are consequently less costly as well as less durable than the elevator described by Mr. Johnson. They are, however, helping many farmers to save labor.

These elevators work best at an angle of 45° or less. At 45° the elevator should be 1½ times as long as the height of the lift. The speed for grain may be up to 200 ft per min. and for bales around 100 ft per min. A ½ hp motor will handle up to a 20 ft elevator at 45° or less. Motor drives are a little more efficient at the upper end than the lower and the motor is more out of the dirt. The elevator is more stable, however, and easier to handle if the motor is at the lower end. If wood bearings are used, blocks should be bolted to the sides of the elevator where the shafts come through.

Barn Hay Curing

. . . . . (Here from page 11)

depth of 30 feet. They are suitable for either baled or loose hay.

Blowers for Driers

Three kinds of blowers are in common use in mow hay driers. Two of them are of the centrifugal type having blades at the outer edge of a cylindrical shaped rotor within a scroll housing. Blowers with forward curving blades made to sell at lower prices are suitable for lower pressure jobs. For high pressures, backward curving or specially designed blades are preferred. The third type of blower is a propeller or fan type, also known as axial flow fans. They are made for low and moderately high pressures. They usually cost somewhat less and are a little noisier in operation than the centrifugal blowers. All types have given satisfaction but they must be selected intelligently for the barn and the drying system to be used.

Chopped and Baled Hay

Mow curing equipment has been designed and used largely for loose, long hay. Some trials have been made in several states with both chopped hay and baled hay.

R. H. Wileman of Purdue University (Lafayette, Ind.), F. W. Duffee at the University of Wisconsin (Madison, Wis.) and C. E. Ramser at the University of Illinois (Urbana, Ill.) all made tests on choppped hay. Their general conclusion was that the hay should be chopped long—more than 2 inch setting of the cutter, and possibly 5-6 inches actual length—and that the moisture content should be not more than 35 per cent when the hay is put in the mow. At greater moisture content there is caking and difficulty in getting air through the hay. There is also some difficulty in blowing chopped hay into the mow when the moisture content is over 35-45 per cent. Wileman and Duffee used TVA duct systems in their tests, and Ramser a slatted floor. The chopped hay was piled to a depth of 7 feet, with a blower delivery of 12 cu ft air per minute per sq ft of floor. Duffee had good results with 6½ ft of chopped hay containing 45-50 percent initial moisture. It cured in from 4 to 7 days with 23 cu ft of air per minute per sq ft of floor.

Wileman made a test of curing baled hay containing 42 per cent moisture over a slatted floor. The fan was operated continuously for 19 days delivering 19½ cu. ft. of air per sq ft of floor. The hay was dried to 10 per cent moisture. There

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User Can Replace Parts Which Wear

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Famous MODEL 41A
Operates Off 110 V AC 60 Cycle or 6 Volt Dry or Storage Battery. Price $26.50.
Battery Units $14.95

All Units Wisconsin Industrial Commission Approved. 30 *Day Trial.*

Famous HOL-DEM electric fence controllers can be shipped from stock. Fastest selling controllers on the market. All types for all purposes. Low cost.

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Fast, safe, proven. More milk, more profit — less work. Simple, easy to clean. Write for catalog.

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AEROVENT "MACHETA" AIRFOIL FANS

for

HAYMAKING REGARDLESS OF THE WEATHER MAN

MOWER TO MOW IN A DAY

If you are planning on that mow hay drying system this year, now is the time to give us the mow size, possible location of fan and number of tons you expect to dry. This will enable us to plan your duct system and give you necessary information in regard to placing your order. Shipments will be made March or April first whichever desired. Write for our new bulletin on Koolhay Barn Ventilation.

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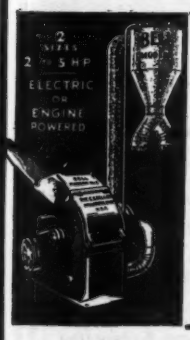

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FOR BETTER — EASIER BROODING

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USES LESS CURRENT

Real, fan developed air conditioning forces vitalized warmth out to the very edges, (Pat. 2302860) for best of luck with your chicks. Elect-O-Stat defies severe weather, maintains needed heat easily. All four models carry December 1941 prices, are outstanding values. 52" square $31.50, 60" square $34.50. See your Makomb Dealer. Free literature sent.

THE MAKOMB LINE Madison Ave. Mooseh, Ill.
World's Largest Manufacturer of Brooders

was some mold in about 50 per cent of the bales.

Carl Jeerings of the Rochester Gas and Electric Co. (Rochester, N. Y.) reports satisfactory curing of loosely baled, twine tied alfalfa that had been rained on immediately after cutting for three days before it was baled. The hay was piled over the main duct of a TVA-UT drier with laterals removed. Bales were arched three deep over the duct and three wide on either side, being placed with broken joints and leaving about a 12 inch air space on either side and 24 inches over the top of the duct. All chinks between bales were carefully filled with loose hay. When the blower was started, the bales cooled quickly and the hay cured satisfactorily.

Grain Sorghums and Peanuts

In Texas, Mr. P. T. Montfort, Agricultural Engineer, A. & M. College (College Station, Texas) has been experimenting with a modified TVA-UT drier in drying combined grain sorghums as well as grain sorghum hay and peanuts. He used a butane burner for supplemental heat in all of his tests. Bins and ducts had to be very tight for grains because of the air pressure required to penetrate them. (2½" for 2½' depth). Peanuts on the vines were dried very successfully from a 64 per cent initial moisture content when piled 7 feet deep over the ducts. He also dried sorgo in bundles, criss-crossed to a depth of 6 feet, and 165 pound sacks of damp rice laid one deep over holes cut in a tight floor with air pressure below.

Future Prospects

Manufacturers are interested in this mow hay curing process. Most of them will have blowers and some will have motors for delivery in limited numbers by March. A WFA representative stated that between 1,000 and 1,200 fan and motor units will be available in time for installation this spring. Local WPB offices are authorized to extend AA-3 ratings on motors and AA-5 on blowers. Farmers must first make application to County Agricultural Conservation Committees for a letter of approval which must then be submitted with Form 541 to WPB. Available units will be in 3, 5, and 7½ horsepower sizes.

One of the problems now is to work out a system of field handling and getting the hay into the barn with a minimum of labor and in a manner that will leave the hay uniform in density and air resistance over the duct system.

1/2" ELECTRIC DRILL for FARM USE

32.50

More and more American farmers are turning to portable power tools to help them keep their much needed farm equipment in repair.

This Speedway ½" Utility Drill was designed for this type of work. It will drill up to ½" holes in steel; up to 1" holes in wood. It can be used with emery wheels or wire scratch brushes for rough grinding and cleaning work, and can be used as a portable power unit for countless farm chores. With reasonable care it will last a lifetime on the average farm.

Ask your hardware or implement dealer how to get the necessary priority, or write us direct.

SpeedWay

Type 89J ½" Drill

Universal motor operates on 110 V. A.C. or D.C. ½" capacity Jacobs chuck and key. 7' lead cord and plug. Removable side handle. Weight 10¼ lbs. No load speed 500 r.p.m.

SPEEDWAY MFG. CO.
1844 S. 52nd Street, Cicero 50, Ill.

It Is New!

Paragon

Barn Haydrier Control

Regularity of operation of blower in barn hay drying is most important for successful results. Paragon Automatic Controls provide this needed regularity.

If you plan on a barn haydrier, ask your electrical man for Paragon Automatic Timing Control.

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FORDS MILKERS

FAST. CLEAN. GENTLE ACTION

Like Hiring an Extra "Hired Man"

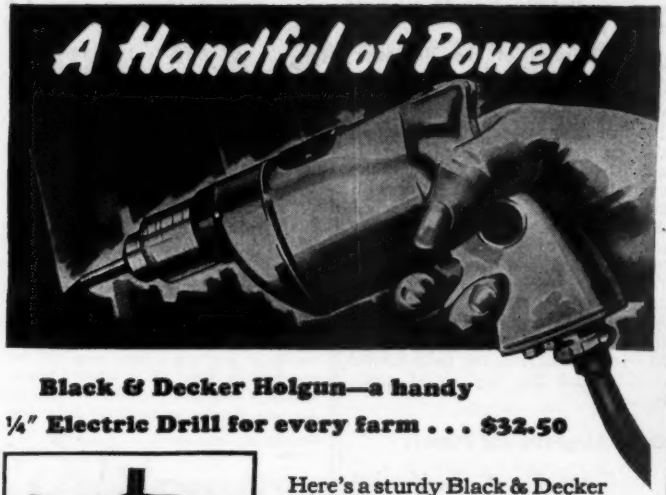
Replaces 2 men at milking time. Milks fast . . . easy-to-clean . . "never fail" construction . . . gentle action . . . beautiful resin-bonded plywood cabinet. Backed by 33 years of careful engineering. Pays for itself in only few months. Absolutely guaranteed. Outstanding in every feature.

Track model — rolls anywhere — no pipelines. Up out of litter — easily installed — quiet.

Also Portable Models

Send for full details and extra low prices. WRITE TODAY!

Myers-Sherman Co., 1306 E. 12th St., Streator, Ill.



Black & Decker Holgun—a handy ¼" Electric Drill for every farm . . . $32.50

BLACK & DECKER ½" STANDARD DRILL. Capacity in steel up to ¼"; in hardwood up to 1". Ideal speed and power for driving wood augers and hole-saws. Price: $53.00.

BLACK & DECKER 6" JUNIOR BENCH GRINDER. Equipped with grinding wheel, wire wheel brush and tool rests. Price: $22.50.

Here's a sturdy Black & Decker ¼" Drill—with the famous "Pistol Grip and Trigger Switch"—that uses electricity on the farm to make short work of countless jobs. Drills holes up to ¼" diameter in metal; up to ½" in wood. Drives small wheels for light grinding, buffing and wire brushing. Makes a handy Drill Press when used in a Black & Decker No. 20 Drill Stand ($14.00). For more information about Black & Decker tools for the farm, see your nearby Black & Decker Distributor, or write to: The Black & Decker Mfg. Co., 655 Pennsylvania Ave., Towson 4, Maryland.

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PORTABLE ELECTRIC TOOLS

FOR YOUR POST-WAR KITCHEN

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Before the war, one of the most popular farm ranges was the Monarch COMBINATION Coal-Wood and Electric Range. After the war, or as soon as production is authorized, it will again enjoy top-rating popularity—because it provides year-'round cooking efficiency and kitchen comfort. Ask your Monarch dealer for literature or write to the factory.

MALLEABLE IRON RANGE CO. 1245 Lake St., Beaver Dam, Wis.

A research committee made up primarily of agricultural engineers in colleges is now at work coordinating the results which have been reported. They will attempt to standardize designs and map out further research work on such fine points of the process as reducing labor, determining the best time of day to cut the hay, and obtaining the maximum possible feeding values. F. W. Duffee of the University of Wisconsin is chairman of the committee.

Questions and Answers

Winter Starting of Cars

▶**Question:** *Is there any way of rigging up an electric motor or plugging in on a light socket to get extra power to help start my car in the winter time?*

E. M. A., Minn.

▶**Answer:** Perhaps the easiest way of letting electricity help you in starting your car in the wintertime is to keep the oil warm by hanging heaters or lamps under the hood near the base of the engine and then covering the hood over with a blanket or some other insulating cover.

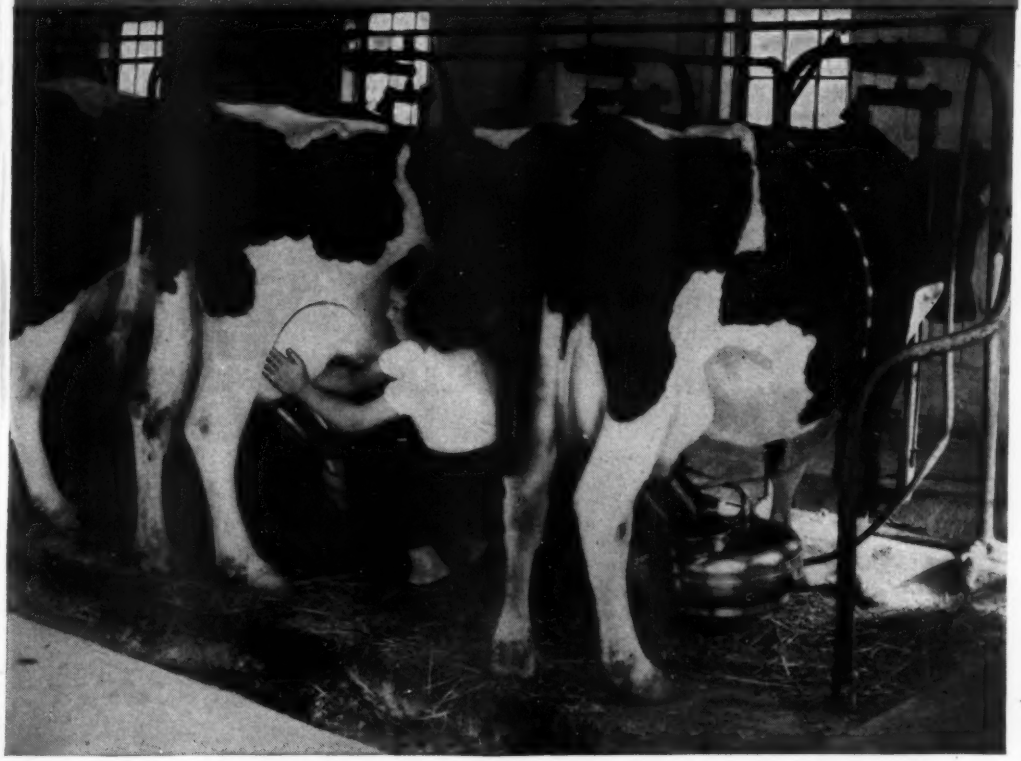
Freezer from Milk Cooler

▶**Question:** *Please advise whether it is practical to use a four-can milk cooler for a home freezer. The box is 36 in. square inside and the coils run completely around it. It is equipped with a ⅓-hp unit, and walls of the box are approximately 2¾ in. thick.* C. E. S., Pa.

▶**Answer:** I would not advise you to try to make a freezer out of a milk cooler. It has been done in a few instances as a matter of expediency during the war by doubling up on the amount of coil in the box. If you did do this you would still have only a makeshift freezer.

Milk coolers do not have sufficient insulation for the low temperatures held in a freezing box nor do they have sufficient coiling to remove the heat from the box fast enough. If you wanted to build one of them over you should double the amount of insulation on the box and double the coiling. You might have to make some change in your cold controls but your compressor unit would probably handle the load with the extra insulation and coils.

15 COWS MILKED IN JUST 31 MINUTES



"It's all very simple" *says* Pauline

With an interested audience checking and *timing* her as she went through the procedure, Pauline Zolko, using two Surge units, actually milked 15 cows in 31 minutes... at the rate of two minutes per cow. When asked to explain her milking procedure she said: "It's all very simple—anybody can do it"—

(1) Wash the cow's udder with hot water and take one or two strippings of fore-milk from each quarter into the strip cup.

(2) Put the milker on and move the surcingle well forward.

(3) Remove the Surge IMMEDIATELY when the cow is through milking.

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